

इंटरनेट

मानक

### Disclosure to Promote the Right To Information

Whereas the Parliament of India has set out to provide a practical regime of right to information for citizens to secure access to information under the control of public authorities, in order to promote transparency and accountability in the working of every public authority, and whereas the attached publication of the Bureau of Indian Standards is of particular interest to the public, particularly disadvantaged communities and those engaged in the pursuit of education and knowledge, the attached public safety standard is made available to promote the timely dissemination of this information in an accurate manner to the public.

“जानने का अधिकार, जीने का अधिकार”

Mazdoor Kisan Shakti Sangathan

“The Right to Information, The Right to Live”

“पुराने को छोड़ नये के तरफ”

Jawaharlal Nehru

“Step Out From the Old to the New”

IS 8519 (1977): Guide for selection of industrial safety equipment for body protection [CHD 8: Occupational Safety, Health and Chemical Hazards]



“ज्ञान से एक नये भारत का निर्माण”

Satyanarayan Gangaram Pitroda

“Invent a New India Using Knowledge”



“ज्ञान एक ऐसा खजाना है जो कभी चुराया नहीं जा सकता है”

Bhartrhari—Nitiśatakam

“Knowledge is such a treasure which cannot be stolen”



BLANK PAGE



IS : 8519 - 1977  
( Reaffirmed 1983 )

## *Indian Standard*

# GUIDE FOR SELECTION OF INDUSTRIAL SAFETY EQUIPMENT FOR BODY PROTECTION

( First Reprint JANUARY 1984 )

UDC 614.895:658.382.3



© Copyright 1977

**INDIAN STANDARDS INSTITUTION**  
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG  
NEW DELHI 110002

# Indian Standard

## GUIDE FOR SELECTION OF INDUSTRIAL SAFETY EQUIPMENT FOR BODY PROTECTION

### Industrial Safety Advisory Committee, ISAC

#### Chairman

BRIG G. R. CHAINANI

#### Representing

Directorate General, Factory Advice Service and Labour Institutes (Ministry of Labour), Bombay

#### Members

SHRI P. R. SURENDRANATHAN (Alternate to Brig G. R. Chainani)	
SHRI BIMAL BANERJEE	Hind Mazdoor Sabha, Bombay
SHRI BACHA PRASAD (Alternate)	
SHRI U. C. BANERJEE	Indian Airlines Corporation, New Delhi
SHRI M. N. ARORA (Alternate)	
SHRI SUSHIL BHATTACHARYA	United Trades Union Congress, Calcutta
SHRI PRATUL CHOWDHURY (Alternate)	
DR M. K. CHAKRABORTY	Central Mining Research Station (CSIR), Dhanbad
DR B. SINGH (Alternate)	
SHRI N. CHAKRABORTY	Ministry of Shipping & Transport
SHRI S. RAGHAVAN (Alternate)	
DR S. K. CHATTERJEE	Directorate General of Health Services, New Delhi
DR A. K. BANERJEE (Alternate)	
CHIEF MECHANICAL ENGINEER, NORTHERN RAILWAY, NEW DELHI	Railway Board (Ministry of Railways)
SHRI J. S. DARA	Indian National Trade Union Congress, New Delhi
SHRI B. K. DHAR	Builders' Association of India, Calcutta
LT-COL D. K. GHOSE (Alternate)	
SHRI D. M. DHAR	Standing Committee on Safety for the Steel Industry, Durgapur
DIRECTOR (COMMERCIAL)	Central Electricity Authority, New Delhi
DEPUTY DIRECTOR (COMMERCIAL) (Alternate)	
SHRI S. K. JAGNANI	Indian Cotton Mills Federation, Bombay
SHRI B. D. JOSHI	All India Trade Union Congress, Delhi

(Continued on page 2)

© Copyright 1977

INDIAN STANDARDS INSTITUTION

This publication is protected under the Indian Copyright Act (XIV of 1957) and reproduction in whole or in part by any means except with written permission of the publisher shall be deemed to be an infringement of copyright under the said Act.

( Continued from page 1 )

<i>Members</i>	<i>Representing</i>
SHRI S. H. KAMAT	All India Manufacturers' Organization, Bombay
SHRI A. R. KESHAVA MURTHY	Ministry of Communications
SHRI H. D. KHANNA	Indian Jute Mills Association, Calcutta
SHRI P. N. MEHROTRA	Standing Fire Advisory Committee ( Ministry of Home Affairs ), New Delhi
SHRI G. B. MENON ( <i>Alternate</i> )	
SHRI I. N. MURTY	Chief Controllorate of Explosives, Nagpur
SHRI CHARANJIT LAL ( <i>Alternate</i> )	
SHRI S. NAMBI	Hindustan Aeronautics Ltd, Bangalore
DR N. M. PANT	The Safety First Association of India, New Delhi
SHRI V. K. MURTHY ( <i>Alternate</i> )	
SHRI S. G. RANADE	Directorate General of Ordnance Factories ( Ministry of Defence ), Calcutta
LT-COL B. N. S. RAO	Ministry of Defence ( DGI )
SHRI S. P. KAPOOR ( <i>Alternate</i> )	
SHRI S. R. C. RAO	Hindustan Steel Ltd, Bhilai
REPRESENTATIVE	Directorate General of Mines Safety, Dhanbad
SHRI K. C. GANGULY ( <i>Alternate</i> )	
SHRI I. C. SARIN	Employees State Insurance Corporation, New Delhi
DR K. M. SAXENA ( <i>Alternate</i> )	
SHRI P. SESHADRI	Ministry of Petroleum & Chemicals
SHRI JAGJIT SINGH ( <i>Alternate I</i> )	
SHRI P. C. EASAW ( <i>Alternate II</i> )	
SHRI D. K. SIRKAR	Indian Chemical Manufacturers' Association, Calcutta
COL SUKHDEV SINGH	National Safety Council, Bombay
SHRI N. RAGHAVAN ( <i>Alternate</i> )	
TECHNICAL ADVISER ( BOILERS )	Central Boilers Board, New Delhi
SHRI P. K. THAKUR	Indian Roads Congress, New Delhi
SHRI G. VISHWANATHAN ( <i>Alternate</i> )	
SHRI S. VENKASWAMY	Directorate General of Civil Aviation, New Delhi
DR G. M. SAXENA, Director ( Chem )	Director General, ISI ( <i>Ex-officio Member</i> )

*Secretary*

SHRI P. S. ARORA  
Deputy Director ( Chem ), ISI

Safety Equipment Subcommittee, ISAC/S-2

*Convener*

SHRI D. M. DEAR Hindustan Steel Ltd, Durgapur

*Members*

SHRI J. J. ADHIA Century Spinning and Manufacturing Co Ltd, Bombay

SHRI M. V. RAO ( *Alternate* ) Ministry of Defence ( DGI )

SHRI K. BARDHAN

SHRI J. P. AGARWAL ( *Alternate* )

( Continued on page 6 )

# *Indian Standard*

## GUIDE FOR SELECTION OF INDUSTRIAL SAFETY EQUIPMENT FOR BODY PROTECTION

### 0. FOREWORD

**0.1** This Indian Standard was adopted by the Indian Standards Institution on 14 March 1977, after the draft finalized by the Industrial Safety Advisory Committee had been approved by the Executive Committee.

**0.2** This standard is intended to guide workers and those in charge of their safety in industrial operations in selecting such protective equipment for the body as will give the required protection against hazards likely to be encountered.

**0.3** Indian Standards published on protection of body equipment are given in Appendix A.

---

### 1. SCOPE

**1.1** This standard describes hazards which call for the use of safety equipment for protection of the whole body and provides guidance on the protection afforded against specific hazards by different types of protective equipment.

### 2. CLASSIFICATION OF HAZARDS RELATED TO BODY PROTECTION EQUIPMENT

**2.1** Hazards against which body protection equipment should be used are given below:

<i>Code No.</i>	<i>Protection Against Hazard of Hazard</i>	<i>Typical Industrial Operations</i>
H-1	Sustained radiant heat	Glass furnaces, forgings, hearths, pit and salt bath furnace, etc
H-2	Flame	Flame proximity and flame entry

<i>Code No. of Hazard</i>	<i>Protection Against Hazard</i>	<i>Typical Industrial Operations</i>
H-3	Hot metal splash and sparks	Foundry, forging and welding, heat treatment and die casting
H-4	Electric current	Work on live conductors
H-5	Water splashes	Dairies and laundries
H-6	Mild acids and alkalis	Pickling and degreasing
H-7	Strong acids and alkalis	Handling and manufacturing chemicals
H-8	Organic solvents, oils	Handling petroleum products
H-9	Flying chips, rough objects, mild impacts	Grinding, woodworking and shot-blasting
H-10	Severe blows and sharp tools	Saw operations, grinders and butchers
H-11	X-rays and gamma rays	X-ray technicians and laboratory workers

### 3. TYPES OF BODY PROTECTION EQUIPMENT

3.1 The types of body protection equipment are given below:

#### 3.1.1 Apron:

3.1.1.1 *Bib type* — covering chest, waist and legs down to the knees or sometimes to ankles.

3.1.1.2 *Waist type* — covering waist and legs down to the knees or below.

3.1.1.3 *Split type* — divided at the crotch and fastened around each leg.

3.1.2 *Cape Sleeve* — Back, shoulder and arm covering which extends over the upper chest. They can also be worn over aprons.

3.1.3 *Over All* — One piece apparel combining pull-on pants with upper portion covering body and the hands partly or wholly.

3.1.4 *Jacket* — Covering upper body from shoulders to hips.

3.1.5 *Coat* — Extending either to knee or ankle to give body and leg protection.

3.1.6 *Suit* — Covering from head to foot, for complete protection, and normally used with respiratory provision.

### 4. SELECTION OF EQUIPMENT FOR DIFFERENT HAZARDS

4.1 It is necessary that in selecting body protection equipment, it should



be borne in mind that the material of which the equipment is made will give protection only against hazards given below:

<i>Sl No.</i>	<i>Material of Construction of the Protective Equipment</i>	<i>Recommended for Use Against Hazard Code No. ( see 2.1 )</i>
i)	Asbestos	H-1, H-2, H-3
ii)	Aluminized fabric	H-1, H-2, H-3
iii)	Glass fibre insulated fabric	H-1, H-2
iv)	Fire-resistant duck	H-2, H-3
v)	Leather	H-3, H-9
vi)	Rubber	H-4, H-5, H-6, H-7
vii)	Coated fabric	H-5
viii)	Plastics, plastics coated fabric	H-5, H-6, H-7, H-8
ix)	Synthetic rubber	H-8
x)	Wire mesh	H-10
xi)	Reinforced leather	H-10
xii)	Lead plastics or lead rubber or lead leather	H-11

## **APPENDIX A**

**( Clause 0.3 )**

### **INDIAN STANDARDS ON PROTECTION OF BODY**

Aprons, lead rubber, X-ray protective	IS : 7352-1974
Aprons, rubber, for hospital use	IS : 6407-1971
Aprons, rubberized, acid and alkali resistant	IS : 4501-1967
Belt and strap, leather, linemen's	IS : 3521-1965
Clothing, leather, protective	IS : 6153-1971
Fabrics, PVC coated, for foul weather clothing	IS : 3322-1965
Suits, flame resistant and heat resistant, functional requirements for	IS : 7612-1974

( Continued from page 2 )

<i>Members</i>	<i>Representing</i>
SHRI K. N. BHATTACHARYA	The Safety First Association of India ( Bihar Branch ), Jamshedpur
SHRI N. K. SARAN ( <i>Alternate</i> )	
SHRI N. C. BRAHMA	Indian Chemical Manufacturers' Association, Calcutta
SHRI A. DAS GUPTA	Adigee Industries, Calcutta
SHRI B. DAS GUPTA ( <i>Alternate</i> )	
DR A. K. GHOSH	Central Mining Research Station ( CSIR ), Dhanbad
SHRI P. R. ROY ( <i>Alternate</i> )	
SHRI P. P. JAIN	Mines Service Corporation, Asansol
SHRI A. P. AGARWALA ( <i>Alternate</i> )	
SHRI S. S. MAZUMDAR	Indian Oxygen Ltd, Calcutta
SHRI K. C. KARMARKAR ( <i>Alternate</i> )	
SHRI I. N. MURTY	Chief Controllorate of Explosives, Nagpur
SHRI CHARANJIT LAL ( <i>Alternate</i> )	
DR M. PANCHOLY	National Physical Laboratory ( CSIR ), New Delhi
SHRI C. PEREIRA	Joseph Leslie & Co, Bombay
SHRIMATI C. LESLIE ROY ( <i>Alternate</i> )	
SHRI S. G. RANADE	Directorate General of Ordnance Factories ( Ministry of Defence ), Calcutta
SHRI GAUTAM V. SHAH	Safety Equipment Corporation, Bombay
SHRI J. V. SHAH ( <i>Alternate</i> )	
SHRI S. D. SHROFF	Pradeep Safety Pvt Ltd, Bombay
SHRI LAL SAJNANI ( <i>Alternate</i> )	
SHRI D. K. SARKAR	Synthetics and Chemicals Ltd, Bareilly
SHRI A. C. SRIVASTAVA	Directorate General of Mines Safety, Dhanbad
SHRI R. L. ARORA ( <i>Alternate</i> )	
COL SUKHDEV SINGH	National Safety Council, Bombay
SHRI N. RAGHAVAN ( <i>Alternate</i> )	
SHRI P. R. SURENDRANATHAN	Directorate General, Factory Advice Service and Labour Institutes ( Ministry of Labour ), Bombay
SHRI K. C. GUPTA ( <i>Alternate</i> )	
SHRI FRANCIS LESLIE VAZ	Francis Leslie & Co, Bombay
SHRI HEATHCLIFF VAZ ( <i>Alternate</i> )	